

# Accelerating Cloud Services

## Improving infrastructure performance

Cloud computing has become an important new tool for IT managers in controlling the cost and complexity of business-critical applications and data. Cloud computing is compelling to enterprises because it allows them to consolidate resources, provision services more quickly, and even rationalize costs more effectively with new business models.

However, there are numerous challenges with this approach that may prevent organizations from succeeding with cloud initiatives. These cloud initiatives may be private cloud (where server and storage resources live behind a corporate firewall) or public cloud (resources live in a shared datacenter, via a service such as Amazon EC2). In both cases, problems with application

performance, available bandwidth, and visibility often limit the effective gains of a scalable cloud computing model. Addressing these limitations can be the difference between success or failure of a cloud-based system, which in turn can affect an organization's effectiveness and competitive advantage in its market.

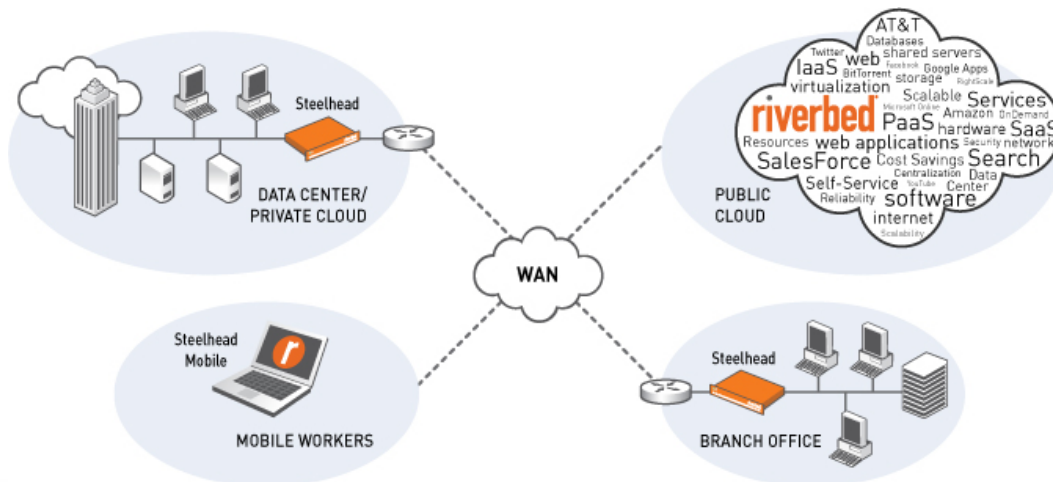
### BENEFITS

- Accelerate public and private cloud services
- Cut bandwidth costs
- Improve consolidation efforts and the migration to clouds

*"Using WAN optimization has enabled our business to build a consolidated, private cloud infrastructure with no negative impact to the end user."*

Riverbed can provide a complete WAN optimization solution to accelerate cloud services and add a layer of intelligence to ensure that consolidated, virtualized applications and services are accessed by end-users everywhere in a way that enables them to be productive, while helping to deliver the expected cost and management efficiencies.

## Typical Private Cloud Deployment Architecture with WAN Optimization



## Private Cloud Services

Private cloud services enable IT departments to do more with the infrastructure that they have already have. In a typical private cloud deployment, enterprises undertake the consolidation of distributed IT resources and apply virtualization to those resources in the data center. This enables IT to provide more cost-effective management while spinning up services faster.

However, private cloud deployments can put significant strain on existing resources and work processes. As IT departments consolidate resources, applications and data are typically moved further away from many end users. Branch office employees and mobile workers now are required to go further across the wide-area network (WAN) to get the information they need. The resulting latency can often dramatically reduce performance, and make the business less productive overall.

At the same time, the consolidation will put more strain on the available bandwidth connecting branch offices to the data center. With consolidated resources, many more user requests will go back to the data center. The WAN will be responsible for carrying significantly more traffic, which could lead to bandwidth congestion, or even force the enterprise to purchase more bandwidth.

## Public Cloud Services

Utilizing a service provider's infrastructure or platform allows enterprises to integrate the public cloud into their IT infrastructure. A public cloud service allows the enterprise to rent compute power and storage, and is usually billed on a discrete basis. Public cloud services are compelling because of scale and elasticity – a service provider supporting thousands of businesses can drive lower costs than any one business alone, and can provide adaptability for changing workloads as an operating expense rather than a capital expense.

One of the major challenges with the adoption of public clouds is performance. Moving services to a public cloud means that enterprises must accept that their applications can potentially be run from anywhere in the world – wherever the data center of the service provider happens to be. Most public cloud services do not specify data center locations in their terms of service, maximizing their freedom to migrate work to reduce their operating costs. In essence, the distance (and latency) in accessing applications may significantly increase for everyone in the enterprise. More surprisingly, those distances may change unpredictably.

## Accelerating Cloud Services

Whether an enterprise develops a private cloud service, uses a public cloud service, or (more likely) decides to use some combination of both, WAN optimization enables organizations to attain the cost, scale, and manageability benefits of cloud offerings while gaining the performance levels and visibility needed for a productive workforce. With WAN optimization solutions from Riverbed, customers can:

- Accelerate access to private and public cloud infrastructure
- Accelerate the movement of virtualized machines and data to cloud data centers
- Significantly reduce the bandwidth needed to support branch offices and data centers
- Improve visibility into network utilization, application performance, and SLAs.

*Riverbed removes wide-area networking performance barriers, enabling the effective use of cloud services.*

Riverbed removes wide-area networking performance barriers, enabling the effective use of cloud services. Riverbed provides its market-leading WAN optimization technology through hardware appliances, software, and virtualized platforms. Riverbed enables customers to accelerate a broad range of applications to end users everywhere.

## About Riverbed

Riverbed Technology is the IT infrastructure performance company. The Riverbed family of wide area network (WAN) optimization solutions liberates businesses from common IT constraints by increasing application performance, enabling consolidation, and providing enterprise-wide network and application visibility – all while eliminating the need to increase bandwidth, storage or servers. Thousands of companies with distributed operations use Riverbed to make their IT infrastructure faster, less expensive and more responsive. Additional information about Riverbed (NASDAQ: RVBD) is available at [www.riverbed.com](http://www.riverbed.com)



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